Remarks

In response to the rejection for obviousness of various claims over Rabenko, the following comments are made.

The claims have been amended to specify apparatus arranged to insert a transport protocol packet of at least 576 bytes to be sent in an allocation of consecutive timeslots of the TDMA protocol. This is the size needed for an Internet Protocol packet, as stated at page 2 of the present application. Expanding the TDMA frame so much, so as to send such a long packet without segmentation, would normally conflict with the requirement to limit latency, in other words limit the wait time for other subscribers. Hence this normally would not be allowed by existing PON standards, but it has now been recognized that it has a number of advantages. Transport packets such as IP packets can be transmitted without the complexity of recombining the segments. The complexities include addressing or sequencing indicators to enable the segments to be recombined correctly at the far end. Also it means that ranging to set different guard band times can be dispensed with to simplify the PON further.

In Rabenko, there is no discussion of stretching the TDMA protocol to enable segmentation to be avoided for such a long packet, nor of any of the advantages of sending such a long packet without segmentation. Rabenko does not specify a maximum size of packets that can be transmitted without resorting to segmentation. Rabenko does indicate that the duration of the time intervals of the time slots can be chosen. According to col 6 line 25 onwards of Rabenko:

> "Each slot 92 may be used for any desired predetermined purpose, e.g., as a request contention region 112 or a transmit opportunity 114. Each slot 92, as defined by a MAP PDU 113, includes a plurality of time intervals 110 and may additionally comprise one or more sub-intervals 115 in addition to the interval(s) 110. The number of intervals 110 and sub-intervals 115 contained within a slot 92 depends upon the contents

of the MAP PDU 113 which defines the slot 92. The duration of each interval 110 and sub-interval 115 may be defined as desired. Optionally, each sub-interval 115 is approximately equal to a media access control (MAC) timing interval. Each MAP PDU 113 defines a frame and each frame defines a plurality of slots 92. The beginning of each sub-interval 115 is aligned in time with the beginning of each interval 110 and each interval 110 typically contains an integral number of sub-intervals 115. Typically, the request contention region 112 and each CM transmit opportunity 114 includes a plurality of integral time intervals 110. However, the request contention region 112 and/or the CM transmit opportunity 114 may alternatively include any desired combination of intervals 110 and sub-intervals 115."

Since Rabenko does not mention segmentation, it therefore implies it is concerned only with shorter packets. It states repeatedly that it is concerned with voice packets which are conventionally very small, a typical size is just 28 bytes for the popular G.729 standard mentioned in column 24. Since ranging is used in Rabenko, (see col 17) this effectively confirms that Rabenko is concerned with conventional short TDMA frames, since ranging to find the different delays between subscriber stations is no longer worthwhile if the TDMA frames are extended as claimed.

Accordingly Rabenko does not anticipate claim 1. Regarding obviousness, the Examiner tries to argue that it would be obvious to optimize the performance by avoiding segmentation. There is no suggestion in Rabenko of stretching the TDMA frame as far as is claimed, to enable packets greater than 576 bytes to be inserted into one frame to avoid segmentation of transport packets such as IP packets. As there is no suggestion of the advantages of this, of enabling IP packets to be sent without the complexity of recombining segmented packets, nor any suggestion of the problems of segmentation, there is no incentive for a skilled person to alter the teaching of Rabenko to reach the invention. Accordingly, this cannot be obvious over Rabenko.

The Examiner notes that Rabenko teaches changing the bandwidth in response to demand. However this is not achieved by expanding a frame of the TDMA protocol, but by altering the proportion of slots allocated to a subscriber. As shown in Fig 3, these time slots are not all consecutive, but are interspersed with slots allocated to other users 114, with maintenance slots 116 and contention slots 112. There is no suggestion that when the number of slots is increased for a given user, that the slots must be consecutive. Furthermore, there is no suggestion that the extra bandwidth is related to longer packets, so it must be assumed that it simply means more short packets, since the document is concerned with short voice packets. Hence this effectively confirms that it would not be obvious to contemplate sending longer packets unless they were segmented.

The other references cited do not affect these arguments, or have been discussed in previous responses.

All the claims now have corresponding distinctive features, or are dependent on such claims, and so are all allowable for the same reasons.

Claim 13 has been amended and claim 14 deleted to address the concerns raised by the Examiner.

Regarding the abstract, an amended abstract was included in the last response, a with the figure reference removed as requested. It is repeated above.

All the points raised have been dealt with, all the claims are allowable and reconsideration is requested.

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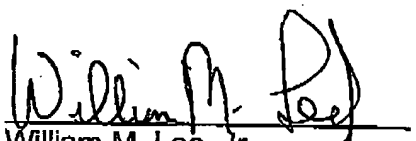
Respectfully submitted,



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